

PRODUCT DATA SHEET

G32S Fluid Loss Control Additive for Oil Well Cement**Product Description**

Polymer molecular chains bundle concentrating reduced slurry cake permeability. The introduction of a variety of functions in the polymer resistant to high temperatures and salt to enhance the performance chart.

Characteristics

- G32S is polymerized by AMPS, low molecular amide and carboxyl acid.
- Appearance: powder or particles, residue
- Salt range: fresh to saturated water
- Filtration property: <100ml API FL
- Dosage: 1~3% (BWOC)
- Compatibility: good
- Solubility with cement: any class of cement
- Stability: free water approach zero
- Thickening time: thickening curve approach a right-angle
- Density range: any density of cement slurry
- Has a certain retarding property on the cement slurry

Technical Specification

- | | |
|--|----------------------------------|
| • Appearance | Grayish white powder or granules |
| • Fluid loss, ml/80°C. 6.9MPa. 30min | ≤100 |
| • Initial consistency, Bc/80°C. 46.5MPa. 45min | ≤30 |
| • Thickening linear | normal |
| • Compression strength, MPa/102°C. 21MPa. 24h | ≥14 |

The ingredients of the cement in the table are : cement800g, water352ml, Dosage of 1.2% G32S.

Packing, Storage

- Sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

G33S Fluid Loss Control Additive for Oil Well Cement**Product Description**

Soluble polymer that consists of multiple functional groups has better anti-temperature and anti-salt ability.

Characteristics

- G33S is polymerized by AMPS, low molecular amide and carboxyl acid.
- Appearance: powder or particles, residue (0.420mm screen) $\leq 7\%$.
- Temperature range: 86~392 F
- Salt range: fresh to saturated water
- Filtration property: <100ml API FL
- Solubility: full soluble
- Dosage: 1~3% (BWOC)
- Compatibility: good
- Solubility with cement: any class of cement
- Stability: free water approach zero
- Thickening time: thickening curve approach a right-angle
- Density range: any density of cement slurry
- Has a certain retarding property on the cement slurry.

Technical Specification

- | | |
|---|----------------------------------|
| • Appearance | Free flowing powder or particles |
| • Initial consistency , BC | ≤ 30 |
| • Fluid loss, ml/176F, 6.9MPa, 30min | ≤ 100 |
| • Thickening time ,ml/176F, 40MPa, 40min | ≥ 60 |
| • Compression strength ,MPa/230F, 21Mpa,24h | ≥ 14 |

The ingredients of the cement in the table are: G class: cement, water quality: tap-water, W/C: 0.44, Dosage of G33S: 1.5% (BWOC).

Packing, Storage

- Sacked with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

For more information on G33S, please email us at info@wellservpec.com

PRODUCT DATA SHEET

G201 Accelerator for Oil Well Cement**Product Description**

G201 can accelerate hydrating of C_3S in cement and change the pH value of water phase to accelerate solidifying of cement and enhance the early strength.

Characteristics

- G201 is made from basic inorganic salts.
- Appearance: white powder or particles, non-poisonous, non-non-odor and non-corrosive;
- Normal dosage: 0.3%~2.0% (BWOC).
- Dissolve easily.
- As no chlorine ion, so it will not corrode the casing;
- Promote the strength of cement stone.
- Has no obvious thickening effect on cement slurry.
- Can be mixed with or without water.

Technical Specification

• Appearance	White powder or particles
• Content of effective substance, %	≥ 93
• Free fluid, ml/75°C	≤ 3.5
• Initial consistency, Bc	≤ 30
• Thickening time, min/75°C, 52MPa, 38min	≤ 100
• Compression strength, MPa/60°C, Normal pressure, 8h	≥ 10.3

The ingredient of cement slurry in the table is: JiaHua G class cement, W/C: 0.44; Water quality: distilled water; Dosage of G201: 0.5% (BWOC)

Packing, Storage

- Be sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

G202 Early Strength Additive for Oil Well Cement**Product Description**

G202 can change ion concentration to accelerate dissolving of the components while cement hydrating, to speed acting of C_3A and forming of calcium aluminous stone; therefore it can densify the structure of cement and enhance the early strengthening.

Characteristics

- Normal dosage: 0.8% ~1.5% (BWOC), and it is not confined in a particular case.
- No chlorine ion, so it will not corrode the casing;
- Increases early strengthening of cement effectively and has no harmful influence on increasing the strengthening.
- Slight expanding effects can compensate the volume contraction of cement and can thereby improve the cementing quality of cement sheath.
- Suitable for normal and low density cement slurry.
- It can be used in shallow or middle-deep wells.
- It can be mixed without water or with water.

Technical Specification

• Appearance		White or grayish powder
• Cement slurry property	Initial consistency, Bc	≤ 30
	Thickening time, min/149°F, 35MPa, 36min	≥ 50
	Compression strength, MPa/149°F, 21MPa, 24h	≥ 18

The ingredients of cement slurry in the table are: JiaHua G class cement, W/C: 0.44; Water quality: distilled water; Dosage of G202: 1.0% (BWOC).

Packing, Storage

- Packaged with three-layer plastics bag with 25kgs.
- To be kept away from moisture, heat and all possible damages of the packaging during transportation must be avoided. To be kept away from sour substances. Storage life time is two years.

PRODUCT DATA SHEET

G203 Early Strength Additive for Oil Well Cement**Product Description**

By changing the structure of C-S-H, G203 can transform the composition of water phase ion, thus to reach the goal of accelerating cement hydration and enhancing early strength of cement stones.

Characteristics

- G203 is made from inorganic materials.
- Appearance: white powder.
- Normal dosage: 1.0%~4.0% (BWOC).
- Increase early strength of cement stones efficiently and has no harmful influence on later strength increasing.
- Suitable for oil/gas wells whose temperature is between 30°C~90°C (BHCT).
- Shorten the thickening time of cement slurry effectively and enhance the early strength of cement stone.
- It makes cement slurry with a slight thixotropy when mixed with G203.

Technical Specification

- | | |
|---|--------------|
| • Appearance | White powder |
| • Fineness (0.315 mesh), % | ≤15.0 |
| • The ratio of thickening time, (32°C . 8.3MPa) | ≤0.5 |
| • Initial consistency (32°C . 8.3MPa), Bc | ≤30 |
| • 6h, Compression strength, (39°C normal pressure), MPa | ≥4.0 |
| • The ratio of 24h (39°C normal pressure), MPa | ≥1.0 |

Low-density slurry formulation: G class cement, W/C:floating beads (Xingtai, Hebei)=10:1 (m/m); Water-solid ratio:0.55, Water quality: distilled water, G203: 2.0%+USZ: 0.5% (BWOS).

Packing, Storage

- Be packed with three-layer plastic bags, 25kg per bag.
- Be kept away from moisture in transportation. If moistened, the additive dosage should be increased. It should be mixed with water when it is used. The worker should wear protective stuff to avoid contacting with skin while operating. The Storage life time is two years.

PRODUCT DATA SHEET

G203A Early Strength Additive for Oil Well Cement**Product Description**

By changing the structure of C-S-H, G203A can transform the composition of water phase ion, thus to reach the goal of accelerating cement hydration and enhancing early strength of cement stones.

Characteristics

- G203A is made from inorganic materials.
- Normal dosage: 1.0%~4.0% (BWOC).
- Increase early strength of cement stones efficiently and has no harmful influence on later strength increasing.
- Suitable for oil/gas wells whose temperature is between 30°C~90°C (BHCT).
- Shorten the thickening time of cement slurry effectively and enhance the early strength of cement stone.
- It makes cement slurry with a slight thixotropy when mixed with G203A.

Technical Specification

• Appearance		White or light yellow powder
• Water Content, %		≤8.0
• Fineness (0.315 mesh), %		≤15.0
• Initial consistency, Bc		≤30
• Thickening time, min/60°C .25MPa		≤60
• Compression strength, MPa/60°C, Normal pressure	8h	≥8
	24h	≥20

The ingredient of normal cement slurry in the table is: G class cement, W/C: 0.44; Water quality: distilled water, Dosage of G203A: 2.0% (BWOC);

Packing, Storage

- Be packed with three-layer plastic bags, 25kg per bag.
- Be kept away from moisture in transportation. If moistened, the additive dosage should be increased. It should be mixed with water when it is used. The worker should wear protective stuff to avoid contacting with skin while operating. The Storage life time is two years.

PRODUCT DATA SHEET

G204 Early Strength Additive for Oil Well Cement**Product Description**

G204 can stabilize and strengthen low density cement slurry through bridging and changing concentration of ion in cement slurry.

Characteristics

- Normal dosage: 1.0%~5.0% (BWOC).
- Suitable temperature: 86 F~194 F (BHCT).
- Can decrease free fluid and volume contraction in low density cement slurry, stabilize and enhance the strength.
- Obvious effects of early strength. The strength of cement is more than 6MPa after 24 hours.
- Can be used in ultra low density cement slurry systems (at less than 1.20g/cm³).
- Suitable for low density cement slurry of fly ash, normal oil well cement, and low density cement slurry of glass micro-spheres.
- Mixed without water.

Technical Specification

- | | |
|---|----------|
| • Appearance | powder |
| • Initial consistency, Bc | ≤30 |
| • thickening time, min/122 F,20MPa,26min | ≥150 |
| • Compression strength , MPa/122 F, Ordinary pressure | >6 (24h) |
| • Compression strength , MPa/122 F, Ordinary pressure | >8 (48h) |

Test conditions: G class cement: micro-spheres=100:10(m/m), W/C (water to cement): 0.70, Dosage of G204:2.0% (BWOC), Water quality: distilled water.

Packing, Storage

- Be packed with three-layer plastics bag, 25kg per bag.
- Be kept away from moisture in store and transportation. Storage life time is two years.

PRODUCT DATA SHEET

G205 Early Strength Additive for Oil Well Cement**Product Description**

G205 oil well cement low temperature early strength agent

G205 concentration by changing the time of cement hydration, accelerate the dissolution of the cement component to accelerate the reaction and generate ettringite C3A, so that the cement structure of dense, achieve early strength of purpose.

Characteristics

- Modified material made from inorganic early strength.
- General increase in the amount of 1% ~ 3% (BWOC), special occasions subject to this limit.
- No chlorine ion, no corrosion of the casing.
- Early strength of cement increased significantly without adversely affecting the growth of the late strength.
- There is certain micro-expansion, it is conducive to the volume shrinkage compensating cement, improving cement quality cement sheath.
- It's suitable for various slurry systems.
- It's suitable for shallow and deep well.
- It's suitable for dry mix.
- It's non-toxic, odorless, no pollution.

Technical Specification

• Appearance	Flowing powder
• Water, %	≤8.0
• Degree of fineness (0.315mmSieve residue), %	≤15.0
• Initial consistency, Bc	≤30
• Thickening time, min/35°C.18Mpa.18min	≤Original mud
• Compression strength, 8h	≥5
Mpa/40°C.Normal 24h	≥12.0

Table slurry formulation: 594g Sichuan Jiahua G class + 208g water 333g quartz sand 2.0% G205 (BWOC) + 1.5% G33S (low) (BWOC).

Packing, Storage

- Be sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

G209 Early Strength Additive for Oil Well Cement**Product Description**

G209 can change ion concentration in cement hydrate to accelerate the acting of C_3S 、 C_3A and forming of calcium aluminous stone. So it can densify the structure and enhance early strength.

Characteristics

- Normal dosage: 1.5%—4.0% (BWOC)
- Applicable temperature: 82.4°F—230°F (BHCT)。
- Be applicable to general and low density cement.
- Be applicable to fly ash low density cement, normal oil cement and floating bead low density cement slurry system.
- Mixed with or without water.

Technical Specification

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|--|-----|---------------------|
| • Appearance | | earth-yellow powder |
| • Initial consistency, Bc | | <30 |
| • Thickening time: min/86°F, Normal pressure. 15 min | | <Base slurry |
| • | 8h | ≥5 |
| • Compression strength, MPa/86°F, Normal pressure | 24h | ≥12 |

The ingredients of cement slurry in the table are: JiaHua G class cement, W/C: 0.44, Water quality: distilled water, Dosage of G209: 2.0% (BWOC) .

Packing, Storage

- Be packed in three-layer plastics bags with 25kg per bag
- Be kept away from moisture, Stored in cool and dry situation. Storage life time is one year.

PRODUCT DATA SHEET

G209-L Early Strength Additive for Oil Well Cement**Product Description**

G209-L can change ion concentration in cement hydrate to accelerate the acting of C3S、C3A and forming of calcium aluminous stone. So it can density the structure and enhance early strength.

Characteristics

- G209-L main consists of inorganic compound.
- Appearance: Earth-yellow liquid.
- Normal dosage: 1.5%~4.0% (BWOC).
- Suitable temperature: 82.4 F—230 F (BHCT).
- Increase early strength of cement stone at low temperature.
- Suitable for low density cement slurry of fly ash, normal oil well cement and low density cement slurry of glass micro-spheres.
- Mixed with water.

Technical Specification

- | | |
|---|---------------------|
| • Appearance | Earth-yellow liquid |
| • Initial consistency, Bc | <30 |
| • Thickening time: min/86 F, Normal pressure, 15min | < Base slurry |
| • Compression strength, MPa/86 F, Normal pressure | ≥4 (8h) |
| • Compression strength, MPa/86 F, Normal pressure | ≥12 (24h) |

The ingredients of cement slurry in the table are: G class cement, W/C: 0.44, Water quality: 4% brine, G209-L : 2.5% (BWOC) .

Packing, Storage

- Be stored in 25L plastic barrel, 25Kg/barrel.
- Be packed and placed slightly against damage and leakage. Storing and transportation are according to the regulation for general chemical substances. Prevent coldness and keep warm in winter. Storage life time is one year.

PRODUCT DATA SHEET

G211 Enhancer Agent for Oil Well Cement**Product Description**

This product plays down the impact of the density on the grout and cement performance. This technology is based on the theoretical basis of choice of optimum ratio and the mixture with a suitable specific gravity and with different particle size distribution. Composed of cement, beads, ultra-fine silica fume, slag, fly ash, micro silica, silicon straw, fine cement, silica fume, etc., plus series admixtures (retarder, dispersants, fluid loss agent).

Characteristics

- It has a high compressive strength at low density.
- It has a low porosity and permeability.
- It can improve sedimentation stability, reduce water loss, and reduce the free water.
- It has a good perforation performance.
- When slurry density fluctuations, its performance is essentially the same, or even a small change.

Technical Specification

• Physical properties	Appearance	Gray powder
	Density	2.80±0.20
	Specific surface, m ² /kg	≥480
• Slurry properties	Slurry density, g/cm ³	1.50±0.02
	Initial consistency, Bc(70°C,30Mpa)	≤30
	Thickening time, min (70°C,30Mpa)	≥80
	Compressive strength, Mpa(70°C,20.7Mpa,24h)	≥20.0

Packing, Storage

- Be sacked with three three-layer plastics bag, 25kg per bag;
 - Be kept away from moisture and damaged condition of package during transportation, stored in cool and dry place.
- Storage life time is two years.

PRODUCT DATA SHEET

G301 Fluid Loss Control Additive for Oil Well Cement**Product Description**

G301 can enhance the viscosity of water phase in cement slurry and form aggregated chains of polymer to plug the pores in mud cake. So it can reduce the permeability of mud cake and to control fluid loss.

Characteristics

- Normal dosage: 0.8% -2.0% (BWOC). API fluid loss: ≤ 250 ml
- Almost no free fluid.
- Dissolve easily.
- No obvious thickening effect on cement slurry, show a slight thixotropic behavior; Has certain retarding property which can be eliminated by using accelerator, so it can be used easily to design right-angle thickening slurry.
- Enhance the compression strength of cement gravel.
- Has a definite salt-resisting property.
- Applicable to oil wells whose circulating temperature is between $104^{\circ}\text{F} \sim 248^{\circ}\text{F}$.
- It will be more effective combining with USZ friction reducing additive.
- Mixed with or without water.

Technical Specification

• Appearance	Reddish brown powder
• Initial consistency, Bc	≤ 30
• Free fluid, ml/167 $^{\circ}\text{F}$	≤ 2.0
• Fluid loss, ml/167 $^{\circ}\text{F}$, 6.9Mpa, 30min	≤ 150
• Thickening time, min/167 $^{\circ}\text{F}$, 52Mpa, 40min	≥ 60
• Compression strength, Mpa/203 $^{\circ}\text{F}$, 21Mpa, 24h	≥ 14

The Ingredients of the cement slurry in the table are: G class cement, W/C 0.44, Dosage of G301: 1.2% (BWOC) + USZ: 0.5%, Water quality: distilled water.

Packing, Storage

- Be sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

For more information on G301, please email us at info@wellservpec.com

PRODUCT DATA SHEET

G302 Fluid Loss Control Additive for Oil Well Cement**Product Description**

G302 can control fluid loss though forming tight polymer film and enhancing viscosity of water phase.

Characteristics

- G302 consists of water-dissolved macromolecules and other related additives.
- Normal dosage: 0.8%~2.0% (BWOC), controlling API fluid loss at less than 150ml.
- Used in oil wells whose BHCT is between 104°F and 248°F, to be combined with a retarder.
- Has no harmful influence on compression strength.
- It can be mixed without water.

Technical Specification

- | | |
|---|----------------------------------|
| • Appearance | Flow ability powder or particles |
| • Initial consistency, Bc | ≤30 |
| • Compression strength, Mpa./203°F .21Mpa.24h | ≥14 |
| • Fluidloss,ml/167°F .6.9Mpa.30min | ≤150 |
| • Thickening time, min/167°F .52Mpa.40min | ≥60 |

The ingredients of the cement slurry in the table are: G class cement, W/C 0.44, Dosage of G302 1.2% (BWOC) +USZ 0.3% (BWOC), Water quality: distilled water.

Packing, Storage

- Be sacked with three-layer plastics bag, 25kg per bag;
- Be kept away from moisture and possible damage of the packages in transportation, and be stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

G303 Fluid Loss Control Additive for Oil Well Cement**Product Description**

G303 can control fluid loss through forming right polymer film and enhancing viscosity of water phase.

Characteristics

- Normal dosage: 0.8%-2.0% (BWOC).
- Slight retarding effect
- Suitable temperature: 86°F ~248°F (BHCT)
- Low initial consistency and good rheology
- No harmful influence on compression strength.
- Mixed without water

Technical Specification

- | | |
|--|----------------------------------|
| • Appearance | Orange brown powder or particles |
| • Initial consistency, Bc | ≤30 |
| • Fluid loss, ml/167°F ,6.9Mpa,30min | ≤150 |
| • Thickening time min/167°F ,40Mpa,40min | ≥60 |
| • Compression strength, Mpa/203°F ,21Mpa,24h | ≥14 |

The ingredients of the cement slurry in the table are: G class cement, W/C 0.44, Dosage of G303: 1.8 % (BWOC),
Water quality: distilled water

Packing, Storage

- Be sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and be stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

G304 Fluid Loss Control Additive for Oil Well Cement**Product Description**

G304 can achieve the purpose of reducing water loss by forming a dense polymer membrane and enhancing the viscosity of the aqueous phase.

Characteristics

- G304 consists of many kinds of additives, such as water-soluble polymer.
- Dosage: 0.8%~2.0% (BWOC)
- G304 has a slight irritating smell.
- G304 has a slight retarding effect.
- Applicable temperature range: 30°C~120°C (BHCT). The adding amount should be increased with the increasing temperature, and together with the necessary retarder to adjust thickening time
- Its initial consistency is small, and slurry rheology is good.
- It has no adverse effect on the compressive strength.
- It's suitable for dry mixing

Technical Specification

• Appearance	Brownish red powder or particles
• Water content, %	≤8.0
• Fineness (0.315 mesh), %	≤15.0
• Initial consistency. Bc	≤30
• Thickening liner, min/80°C. 46.5MPa.45min	Normal
• 40Bc~100Bc, time, min	≤40
• Water loss, ml/80°C. 6.9MPa.30min	≤150
• Compression strength, Mpa / 102°C, 21Mpa, 24h	≥14

The ingredients of the cement in the table are: G class cement, W/C: 0.44; Dosage of G304: 1.2% (BWOC); Water quality: distilled water.

Packing, Storage

- Be sacked with three three-layer plastics bag, 25kg per bag;
- Be kept away from moisture and damaged condition of package during transportation, stored in cool and dry place. Storage life time is two years.
- When applying it, do not let it touch your skin.

PRODUCT DATA SHEET

G306 Fluid Loss Control Additive for Oil Well Cement**Product Description**

G306 can control fluid loss through forming tight polymer film and enhancing viscosity of water phase.

Characteristics

- G306 consists of water-dissolved macromolecules and reinforcing materials.
- Normal dosage: 0.8%-2.0% (BWOC).
- Suitable circulate temperature: 86°F ~ 356°F (BHCT).
- Mixed without water.

Technical Specification

- | | |
|--|----------------------------------|
| • Appearance | Flow ability powder or particles |
| • Initial consistency, Bc | ≤30 |
| • Fluid loss, ml/167°F, 6.9Mpa, 30min | ≤150 |
| • Thickening time, min/167°F, 40Mpa, 40min | ≥60 |
| • Compression strength, Mpa/167°F, 0.1Mpa, 24h | ≥14 |

The ingredients of the cement slurry in the table are: G class cement, W/C: 0.44, Dosage of G306: 1.2% (BWOC) +USZ: 0.3%, Water quality: distilled wate.

Packing, Storage

- Be sacked with three-layer plastics bag, 25kg per bag
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation.
- Storage life time is two years.

PRODUCT DATA SHEET

G307A Early Strength and Anti leaking Fluid Loss Control Additive for Oil Well Cement

Product Description

G307A Early Strength and Anti leaking Fluid Loss Control Additive for Oil Well Cement belongs to Water-soluble high polymer. Molecular chains get together in the cement slurry, thus to reduce the penetration ratio of slurry cake. In addition, drawing a variety of functional groups into the polymer will enhance the product's dissolution rate and the performance of anti-high-temperature and anti-salt at a low temperature in the cement slurry.

Characteristics

- G307A mainly consists of water-dissolved macromolecules, complex with inorganic early strength agent components and other Crystal expandable materials.
- Normal dosage: 2.0%-3.5% (BWOC).
- G307A can effectively enhance the early strength of cement stone.
- It has the micro-expansion effect, and can effectively compensate for pressure loss caused by the hydration volume reduction, thus effectively preventing the gas-water leaking in the stratum.
- Applicable temperature: 30°C — 90°C (BHCT) .
- Combined with retarder, can be used in middle-deep wells.
- Preferred to mix without water.

Technical Specification

• Appearance	Floating powder or particles
• Water content, %	≤8.0
• Fineness (0.315 mesh), %	≤15.0
• Initial consistency. Bc/100°C. 60.2MPa.53min	≤30
• Thickening liner	Normal
• 40Bc~100Bc, time, min	≤40
• Water loss, ml/100°C. 6.9MPa.30min	≤150
• Compression strength, Mpa / 125°C, 21Mpa, 24h	≥18

The ingredient of the cement slurry in the table is: G class cement, W/C: 0.44; Dosage of G307A: 3.0 % (BWOC), Water quality: distilled water.

Packing, Storage

- Be sacked with three three-layer plastics bag, 25kg per bag;
- Be kept away from moisture and damaged condition of package during transportation, stored in cool and dry place. Storage life time is two years.

For more information on G307A, please email us at info@wellservpec.com

PRODUCT DATA SHEET

G307B Early Strength and Anti leaking Fluid Loss Control Additive for Oil Well Cement

Product Description

G307B Early Strength and Anti leaking Fluid Loss Control Additive for Oil Well Cement belongs to Water-soluble high polymer. Molecular chains get together in the cement slurry, thus to reduce the penetration ratio of slurry cake. In addition, drawing a variety of functional groups into the polymer will enhance the product's dissolution rate and the performance of anti-high-temperature and anti-salt at a low temperature in the cement slurry.

Characteristics

- G307B mainly consists of water-dissolved macromolecules, complex with inorganic early strength agent components and other Crystal expandable materials.
- Normal dosage: 2.0%-3.5% (BWOC).
- G307B can effectively enhance the early strength of cement stone.
- It has the micro-expansion effect, and can effectively compensate for pressure loss caused by the hydration volume reduction, thus effectively preventing the gas-water leaking in the stratum.
- Applicable temperature: 30°C — 90°C (BHCT) .
- Combined with retarder, can be used in shallow-deep and middle-deep wells.
- Preferred to mix without water.

Technical Specification

• Appearance	Floating powder or particles
• Water content, %	≤8.0
• Fineness (0.315 mesh), %	≤15.0
• Initial consistency. Bc/50°C. 25.9MPa.32min	≤30
• Thickening liner	Normal
• 40Bc~100Bc, time, min	≤40
• Water loss, ml/50°C. 6.9MPa.30min	≤150
• Compression strength, Mpa / 71°C, 21Mpa, 24h	≥18

The ingredient of the cement slurry in the table is: G class cement, W/C: 0.44; Dosage of G307B: 2.5 % (BWOC), Water quality: distilled water.

Packing, Storage

- Be sacked with three three-layer plastics bag, 25kg per bag;
- Be kept away from moisture and damaged condition of package during transportation, stored in cool and dry place. Storage life time is two years.

For more information on G307B, please email us at info@wellservpec.com

PRODUCT DATA SHEET

G309 Fluid Loss Control Additive for Oil Well Cement**Product Description**

G309 can control fluid loss and expansion through forming a tight film that depends on the crystal expansion of hydratable substance.

Characteristics

- Appearance: white powder or particles.
- Normal dosage: 0.8%-2.0%(BWOC) for normal density cement slurry, and 1.0%—3.0% (BWOC) for low density cement slurry,
- Applicable temperature:30°C—120°C (BHCT) .
- Little fluid loss, high early strength, free fluid closes to zero.
- Tiny expansion, the cement can engender effective expansion while it is in plastic phase or has been hardened. It can be used to as gas locked agent, enhance the strength of cement and cementation, densify the structure of cement.
- Good rheology of cement slurry, adjustable thickening time, thickening curve 40Bc~70Bc, short transition thickening time.
- Mixed without water with cement equably.

Technical Specification

- | | |
|---|---------------------------|
| ● Appearance | white powder or particles |
| ● Quantum of fluid loss, ml/60°C.6.9Mpa.30min | ≤150 |
| ● Initial consistency.Bc | ≤30 |
| ● Thickening time min/60°C.40Mpa.30min | ≥60 |
| ● Compression strength,Mpa / 60°C.normal pressure, 8h | ≥14 |

The ingredient of the cement slurry in the table is: G class cement, W/C: 0.44, Dosage of G309: 1.2% (BWOC), Water quality: distilled water.

Packing, Storage

- Be sacked with three layer package, 25kg per bag.
- Be kept away from moisture, stored in cool and dry situation. Storage life time is one year.

PRODUCT DATA SHEET

G310 Fluid Loss Control Additive for Oil Well Cement**Product Description**

As the aggregated molecule chain of water soluble polymer can decrease the mud cake permeability of mud slurry, G310 introduces multi-functional groups that enhance the ability of anti-high temperature and anti-salt.

Characteristics

- Temperature range: 86°F ~392°F
- Salt range: fresh to saturated water
- Filtration property: <50mlAPI FL
- Solubility: soluble
- Dosage: 3~6%(BWOC)
- Solubility with cement: applicable for any cement classes
- Stability: free water approach zero
- Thickening time: thickening curve approach a right-angle
- Density range: any density of cement slurry system
- Retarder effect can be controlled by G201 or G212 accelerator in low and medium temperature.

Technical Specification

- | | |
|---|----------------|
| • Appearance | viscous liquid |
| • Initial consistency , BC | ≤30 |
| • Fluid loss, ml/176 F, 6.9MPa 30min | ≤100 |
| • Thickening time ,ml/176 F,40MPa,40min | ≥60 |
| • Compression strength, MPa/176 F. Normal pressure. 24h | ≥14 |

The ingredients of the cement in the table are: G class cement, W/C: 0.44, water quality: distilled water, Dosage of G310: 5.0% (BWOC).

Packing, Storage

- Be stored in 25L plastic barrel, 25kg / plastic barrel.
- Be kept away from moisture and possible damage of the packages at transportation; be stored in cool and dry situation. Storage life time is oneyear.

For more information on G310, please email us at info@wellservpec.com

PRODUCT DATA SHEET

G311 Fluid Loss Control Additive for Oil Well Cement**Product Description**

As the aggregated molecule chain of water soluble polymer can decrease the mud cake permeability of mud slurry, Introducing multi-functional groups in polymer that enhance the ability of anti-high temperature and anti-salt. In addition, by adjusting the molecular weight, impart the fluid loss additive the performance of thickening, suspension.

Characteristics

- G311 is gained by the polymerization of low molecular weight amides, carboxylic acid.
- G311 is a kind of viscous liquid
- Anti-temperature range: 30°C-120°C
- Salt range: fresh to saturated water
- Filtration property: <100mlAPI FL
- Solubility: soluble
- Dosage: 4%-6%(BWOC)
- Solubility with cement: applicable for any cement classes
- Stability: free water approach zero
- Thickening time: thickening curve approach a right-angle
- Density range: any density of cement slurry system
- It has a retarding effect, and when at medium and low temperature conditions, utilizing with the early strength agent and coagulant can adjust thickening time.

Technical Specification

- | | |
|---|------|
| • Initial consistency , BC | ≤30 |
| • Fluid loss, ml/176 F, 6.9MPa 30min | ≤100 |
| • Thickening time ,ml/176 F,40MPa,40min | ≥60 |
| • Compression strength, MPa/176 F. Normal pressure. 24h | ≥14 |

The ingredients of the cement in the table are: G class cement, 1.90 g/cm³; water quality: distilled water, Dosage of G311: 5.0% (BWOC).

Packing, Storage

- Be stored in 25L plastic barrel, 25kg / plastic barrel.
- Be kept away from moisture and possible damage of the packages at transportation; be stored in cool and dry situation. Storage life time is one year.

PRODUCT DATA SHEET

G315 Fluid Loss Control Additive for Oil Well Cement**Product Description**

By forming a dense polymer film and increasing the viscosity of the aqueous phase, G315 can achieve the purpose of reducing fluid loss.

Characteristics

- G315 compounds from a variety of water-soluble polymers and other additives.
- Its appearance is viscous liquid, and specific gravity is about 1g / cm³.
- Its common dosage is 5% ~ 7% (BWOS), and it must be used in conjunction with the UPV-L, when increasing the amount dosage of G315, it should also be increased the UPV-L dosage amount to adjust good rheology.
- Temperature range: 30°C ~ 140°C (BHCT); and adding the dosage amount along with the developing of temperature, and supplemented by the necessary retarder to adjust thickening time.
- Its initial consistency is small, and slurry rheology is good.
- It has no adverse effect on the compressive strength.
- It is suitable to dry mixing.

Technical Specification

- | | |
|---|----------------|
| • Appearance | Viscous liquid |
| • Loss of water, ml/75°C.6.9MPa.30min | ≤100 |
| • Free fluid volume, ml/75°C | ≤3.5 |
| • Initial consistency, Bc | ≤30 |
| • Thickening time, min/75°C.52MPa.40min | ≥60 |
| • Compression strength, MPa/110°C.21MPa.24h | ≥14 |

The ingredients of the cement in the table are: G class cement: 800g³; distilled water: 330g; G315 : 5.0%(BWOC)+UPV-L: 1.0%+G301: 0.2%.

Packing, Storage

- Be stored in 25L plastic barrel of polyethylene, 25kg / plastic barrel.
- Be kept away from moisture and possible damage of the packages at transportation; be stored in cool and dry situation. Storage life time is one year.

PRODUCT DATA SHEET

G401 Expanding Additive for Oil Well Cement**Product Description**

G401 expanding additive for oil well cement is of the cement hydration products, which can compensate for the grout (stone), shrink and produce volume micro-expansion. It is conducive to anti-channeling, compress cement porosity and improve the pores' distribution, thus to achieve the goal of improving strength and reducing the permeability rate. And in restricted state, enhancing the product's prestress and improving the bond strength of cement is good for preventing corrosion of the cement and casing pipes, and controlling loop current. G401 has a good compatibility with other additives, and does not affect the other properties of slurry. It has a wide scope of temperature allowance (25 ~ 150°C) and a good performance on salt tolerance.

Characteristics

- Normal dosage: 2%~3% (BWOC).
- It has no adverse effects on thickening time, rheological properties and the free water, and has significantly improved compressive strength.
- It is suitable for cement slurry with normal and low density of cement slurry.
- It is applicable for the wells with irregular enlarged diameter of well holes, and can adjust the balance pressure in deep wells, and anti-channeling and balance pressure during cementing wells. It can apply to high pressure cementing with active oil and gas.
- It is preferred to be mixed without water.

Technical Specification

- | | |
|---|--------------|
| • Appearance | white powder |
| • Thickening time, min/149 F,35MPa,30min | ≤120 |
| • Expansion ratio (%), Plastic state(167 F, 0.1Mpa) | ≥0.10 |
| • Expansion ratio (%),Cementation station (167 F, 0.1MPa,24h) (Ex—Ex ₀) | 0.01~0.8 |
| • Compression strength, MPa/167 F, 0.1MPa,24h | ≥14 |

No.1 The experimental conditions: G class: cement, W/C: 0.44; Water quality: distilled water; Dosage of G401: 2.0% (BWOC)

No.2 The plastic state' expansion ratio is the cement slurry initial set' expansion ratio

No.3 Ex₀:Expansion ratio(the cement slurry without G401), Ex₀:Expansion ratio (the cement slurry with G401)

Packing, Storage

- Packed in tri-layer paper bags with polyethylene liner, 10kg/bag or packed according to the request of clients.
- Placed in dry, ventilated, shady and cool circumstance. Be kept away from harmful substance in store and transportation.
- Its storage life is two years.

PRODUCT DATA SHEET

G403 Toughening Agent for Oil Well Cement**Product Description**

Relying on Crack resistance and toughness properties of the composite fibers and utilizing fiber's load transportation, G403 Toughening agent for oil well cementing can make the internal defect of stress of the cement disperse, and enhance the ability of impact resistance of the cement. With the flexural loads affection, G403 is able to improve load capacity of the cement to form a visible crack ,and then prevent the stress of cement cracking; At the affection of load, G403 can prevent the crack from expanding. And under strong impact loading, G403 can form a shield at the stress field of crack-tip, thus to significantly increase the toughness of the cement, to protect the oil and gas layer, to prevent brittleness defects due to perforation. At the same time, the product has a certain character of micro-expansion. It can compensate for the cement slurry (stone) shrinkage, and produce micro volume expansion, beneficial to prevent oil, gas and water channeling.

Characteristics

- Non-toxic, odorless
- Common dosage is 1.5% ~2.5%(BWOC).
- No adverse effects on slurry thickening time, rheology, free water and so on, significantly improve compressive strength.
- Applicable to all types of cement slurry.
- Suitable for dry mixing, and can't mix with water.

Technical Specification

• Appearance	Gray white fibers
• Initial consistency, Bc /52℃.35.6MPa.28min	≤30
• Thickening linear	Normal
• Anti-flexural strength, increase rate, %/75 °C.0.1 MPa.48 h	>15
• Anti-impact energy, increase rate, %/75 °C.0.1 MPa.48 h	>15
• Compressive strength, MPa/75 °C.0.1 MPa.48 h	≥14

Cement slurry formulation in the table: G class cement , W/C(water and cement ratio): 0.44, Water quality: Distilled water, 1.8%G403+0.5%USZ

Packing, Storage

- Storage by triple layer paper bags, 25kg/bag.
- During transportation, prevent package damage; storage and transportation do not contact with acid, to guard against moisture.
- Storage for two years.

For more information on G403, please email us at info@wellservpec.com

PRODUCT DATA SHEET

GD-1 Anti-High temperature Drag Reducing Agent for Oil Well Cement**Product Description**

GD-1 drag reducing agent (dispersant) can obtain a suitable slurry rheology by adjusting the surface charge of the cement particle, thus to reducing pump pressure, and improving the displacement efficiency, and fulfilling the purpose of ease of construction.

Characteristics

- GD-1 is Polymerized and modified by raw formaldehyde, acetone and other materials.
- Dosage of GD-1 is 0.3%~0.8%(BWOC),if there is special application, it cannot be limited by this range.
- GD-1 is easy to be dissolved in water.
- It can effectively regulate slurry rheology along with the increase of dosage amount, and can reduce slurry's consistency.
- It has a good capability of anti-high temperature, applicable to 30°C~180°C (BHCT) .
- It can make the cement stone denser and develop the anti-pressure capability and also has a certain ability of controlling fluid loss.
- It has a certain ability of retarding.
- GD-1 can both dry mixing and wet mixing.
- It has a good compatibility with other additives.

Technical Specification

- | | |
|---|------------------|
| • Appearance | Brown-red powder |
| • Initial consistency, Bc | ≤20 |
| • Thickening time, min/85°C.70.3MPa.44min | ≥60 |
| | n ≥0.5 |
| • Rheological properties85°C. Normal pressure | k, Pa.sn ≤0.7 |
| • Compressive strength, MPa/110°C.21MPa.24h | ≥11 |
- Slurry formulation on the table above: G class cement W/C: 0.44 Dosage ofGD-1: 0.5%(BWOC) Quality of water: distilled water

Packing, Storage

- GD-1 can be sacked with three three-layer plastics bag, 25kg per bag.
- GD-1 Transportation should pay attention to moisture and packaging damage.
- It should be stored in a cool dry place, and its storage period is two years.

PRODUCT DATA SHEET

GH-6 Medium Temperature Retarder for Oil Well Cement**Product Description**

GH-6 belongs to the same series of liquid retarders. GH-6 can stick on the surfaces of cement hydrate to inhibit contacting between cement and water, also stick on the surfaces of crystal nucleons to prevent their enlarging. So it can retard hydrating of cement slurry.

Characteristics

- Normal dosage: 0.06%-1.0% (BWOC), add more with increasing of temperature.
- Suitable temperature: circulate temperature under bore is 167 F~212 F (BHCT);
- Reduce consistency of cement slurry and improve the rheology.
- Retard the thickening time efficiently;
- GH-6 is sensitive, it need add accurate amount when using.

Technical Specification

- | | |
|--|-----------------|
| • Appearance | Colorless fluid |
| • Initial consistency, Bc | ≤30 |
| • Thickening time adjustment/176°F,46.5MPa,45min | Adjustable |
| • Compression strength, Mpa,/215.6°F, 21Mpa,24h | ≥14 |

The ingredients of cement slurry in the table are: G class cement: 594g + silica sand: 208g (160~200mesh) .distilled water 333ml, GH-8: 1.0~2.5% (BWOS).

Packing, Storage

- Be stored in 25L plastic barrels, 25kg/barrels.
- Be kept away from damage and leakage in store and transportation. Storage life time is two years.

PRODUCT DATA SHEET

GH-7 High Temperature Retarder for Oil Well Cement**Product Description**

GH-7 can stick on the surfaces of cement hydrate to inhibit contacting between cement and water, also stick on the surfaces of crystal particles to prevent their enlarging. So it can retard hydrating of cement slurry.

Characteristics

- Normal dosage: 0.5%~2.0% (BWOS), it is sensitive for temperature, should add more with increasing of temperature;
- Reduce consistency of cement slurry and improve the rheology.
- Retard the thickening time efficiently;
- Suitable temperature: circulate temperature under bore is 215.6°F ~284°F (BHCT) .
- GH-7 has good compatibility with other additives.

Technical Specification

- | | |
|--|--------------|
| • Appearance | Brown liquid |
| • Initial consistency, Bc | ≤30 |
| • Thickening time' adjustment,/248°F , 70MPa,60min | Adjustable |
| • 40Bc~100Bc,min | ≤40 |
| • Free fluid, ml/203°F | ≤2.5 |
| • Compression strength, MPa/248°F ,21 MPa,48h | ≥14 |

The ingredients of cement slurry in the table are: JiaHua G class cement: 594g + silica sand:208g (160~200mesh) ,distilled water:333ml, GH-7: 0.5~2.0%(BWOS).

Packing, Storage

- Be stored in 25L plastic barrels, 25Kg/barrels.
- Be kept away from damage and leakage in store and transportation and stored in cool situation. Storage life time is two years.

PRODUCT DATA SHEET

GH-8 Retarder for High Temperature Oil Well Cement**Product Description**

GH-8 can absorb on the surfaces of cement hydration to inhibit it contacting with water and forming chelae with Ca^{2+} to prevent crystal nucleus forming early. So it can retard thickening time.

Characteristics

- Normal dosage: 1.0% ~2.5%(BWOS), it is sensitive for temperature, should add more with increasing of temperature;
- Reduce consistency of cement slurry and improve the rheology;
- Retard the thickening time efficiently;
- Suitable temperature: circulate temperature under bore is 230°F~320°F (BHCT).

Technical Specification

• Appearance	Colorless fluid
• Initial consistency, Bc	≤30
• Thickening time adjustment/284°F , 87.6MPa. 69min	Adjustable
• 40Bc~100Bc,min	≤40
• Free fluid, ml/203°F	≤2.5
• Compression strength, Mpa,/ 327.2°F ,21MPa,48h	≥14

The ingredients of cement slurry in the table are: G class cement: 594g + silica sand: 208g (160~200mesh) .distilled water 333ml, GH-8: 1.0~2.5% (BWOS).

Packing, Storage

- Be packed with three-layer plastics bags, 25kg per bag.
- Be kept away from moisture and possible damage of the packages during transportation; be stored in cool and dry situation. Storage life time is two years.

For more information on GH-8, please email us at info@wellservpec.com

PRODUCT DATA SHEET

GH-9 Retarder for High Temperature Oil Well Cement**Product Description**

GH-9 belongs to the same series of liquid retarders. It can absorb on the surfaces of the cement slurry hydrate to inhibit contact with water and chelate with Ca^{2+} to prevent crystal nucleus forming early. Therefore, it can retard thickening time.

Characteristics

- Normal dosage: 0.3%-2.5% (BWOS).
- Suitable temperature: 140°F~356°F (BHCT).
- Reduce consistency of cement slurry and improve the rheology.
- No harmful on other properties of cement slurry.

Technical Specification

• Appearance	Colorless or pale red liquid
• Initial consistency, Bc	≤30
• Thickening time adjustment/248°F, 70MPa, 60min	Adjustable
• Thickening curve	Normal
• 40Bc~100Bc,min	≤40
• Free fluid, ml/203°F	≤2.5
• Compression strength, Mpa,/ 248°F, 21Mpa, 48h	≥14

The ingredients of cement slurry in the table are: G class cement: 594g + silica sand: 208g (160~200mesh), distilled water 320ml, Dosage of GH-9: 0.8~2.5% (BWOS) +G310:5.0%+G401:1.5%.

Packing, Storage

- Be stored in 25L plastic barrels, 25kg/barrel.
- Be kept away from moisture, Stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

GH-9S Retarder for High Temperature Oil Well Cement**Product Description**

GH-9S is a two carboxylic acid groups and sulfonate groups and tricalcium aluminate and tricalcium silicate reaction, adsorption, chelation, dispersing and wetting role in the early stages of cement hydration by diffusion electric double layer cement particles dispersed in the surface of cement particles with calcium ions to form solvation film preferentially adsorbed on tricalcium aluminate hydration slowed, showing a strong retarding effect, while the tricalcium silicate showed a weaker adsorption properties, thus ensuring the late cement strength development.

Technical Specification

• Appearance	white powders
• moisture, %	≤8.0
• Fineness (0.315mm shorts), %	≤10.0
• Thickening time' adjustment/248°F, 70MPa, 60min	Adjustable
• Initial consistency, Bc/120°C. 73.9MPa. 61min	≤30
• 40Bc~100Bc, min	≤40
• Thickening curve	normal
• Free fluid, %	≤1.4
• Compression strength, Mpa/248°F, 21Mpa, 48h	≥14

The ingredients of cement slurry in the table are: G class cement: 594g + silica sand: 208g, distilled water 333ml, Dosage of 0.9%GH-9+0.4% G401

Packing, Storage

- Be stored in 25L plastic barrels, 25kg/barrel.
- Be kept away from moisture, Stored in cool and dry situation. Storage life time is two years.

For more information on GH-9S, please email us at info@wellservpec.com

PRODUCT DATA SHEET

GH-I Middle Temperature Retarder for Oil Well Cement**Product Description**

GH-I can stick on the surfaces of cement hydrate to inhibit contacting between cement and water, also stick on the surfaces of crystal nucleons to prevent their enlarging. So it can retard hydrating of cement slurry.

Characteristics

- Normal dosage: 0.1% -1.0% (BWOC). It is more efficient if it is used combining with USZ friction reducing additive when middle-deep well is cemented; It can reduce the consistency of cement slurry and improve the rheology.
- It can reduce the consistency of cement slurry and improve the rheology.
- Retard the thickening time efficiently.
- Generally used in oil wells whose circulate temperature under bore is below 230°F.
- Mixed without water.

Technical Specification

- | | |
|--|--------------------|
| • Appearance | Pale yellow powder |
| • Initial consistency, BC | ≤30 |
| • Thickening time's adjustment /176°F ,46.5MPa.45min | Adjustable |
| • Compression strength, Mpa/215.6°F ,21Mpa, 24h | ≥14 |

The ingredients of the cement slurry in the table are: G class cement, W/C 0.44, Dosage of GH-I: 0.1% ~ 1.0%+USZ: 0.4%, Water quality: distilled water.

Packing, Storage

- Be packed in three-layer plastics bags with 25kg per bag
- Be kept away from moisture and possible damage of the packages during transportation; to be stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

GH-II High Temperature Retarder for Oil Well Cement**Product Description**

GH-II can be absorbed on the surface of the cement slurry hydrate to inhibit contacting with water and chelating with Ca^{2+} to prevent crystal nucleus from forming early. Therefore, it can retard thickening time.

Characteristics

- Normal dosage: 0.7 %~2.0% (BWOC) .
- Suitable temperature: 230°F~338°F (BHCT).
- Reduce consistency of cement slurry and improve the rheology.
- Thickening time is adjustable.
- No harmful influence on other properties of cement slurry.

Technical Specification

- | | |
|--|------------------------------|
| • Appearance | light yellow or brown powder |
| • Initial consistency , Bc | ≤30 |
| • Thickening time, min/244.4°F .70MPa.60min | 180~420 adjustable |
| • Compression strength, Mpa/287.6°F .21Mpa.48h | ≥14 |

The ingredients of cement slurry in the table are: G class: cement 594g+Silica sand: 208g(160~200mesh),Distilled water 333ml, GH-II: 0.7~2.0%(BWOC).

Packing, Storage

- Be packed with three-layer plastics bags, 25kg per bag
- Be kept away from damage and leakage in store and transportation, Storage life time is two years.

For more information on GH-II, please email us at info@wellservpec.com

PRODUCT DATA SHEET

GH-IIB High Temperature Retarder for Oil Well Cement**Product Description**

GH-IIB belongs to the same system of retarder with GH-II. GH-IIB can be absorbed on the surface of the cement slurry hydrate to inhibit contacting with water and chelating with Ca^{2+} to prevent crystal nucleus from forming early. Therefore, it can retard thickening time.

Characteristics

- The component of GH-IIB is sulfonate, organic salts and etc.
- Its appearance is dark brown liquid, and its specific gravity is about 1.2g / cm³.
- General dosage is 1.5% ~ 3.0% (BWOC).
- It's suitable for 110 °C ~ 170 °C (BHCT) oil and gas wells.
- It can reduce water slurry consistency, improve water slurry rheology.
- Its thickening time with the added amount of change can be adjusted.
- It has no adverse effect on other properties of the cement slurry.

Technical Specification

- | | |
|---|--------------------|
| • Initial consistency ,Bc | ≤30 |
| • Thickening time, min/118 °C .110MPa. | 180~420 adjustable |
| • Compression strength, Mpa/142 °C .21Mpa.48h | ≥14 |

The ingredients of cement slurry in the table are: G class: cement 594g+Silica sand: 208g(160~200mesh),Distilled water 333ml, GH-IIB: 1.5~3.0%(BWOC).

Packing, Storage

- Be packed with plastics barrel, 25kg per barrel.
- Be kept away from damage and leakage in store and transportation, Storage life time is one year.
- GH-IIB will have a slight precipitation after long storage, shake well, and it will not affect the results of applying.

For more information on GH-IIB, please email us at info@wellservpec.com

PRODUCT DATA SHEET

GR Latex for Oil Well Cement**Product Description**

The main ingredient of GR latex for oil well cement is styrene-butadiene latex, which is formed by means of emulsion polymerization, butadiene and styrene used as the main monomer. GR has a good chemical stability and mechanical stability, and has a good performance of anti-gas leak in the process of cement's waiting condensation.

Characteristics

- The main ingredient of GR is styrene-butadiene latex.
- GR latex has a good performance of anti-gas leak.
- GR is compatible with all kinds of oil well cements and most of other additives.
- GR has good salt-resistance ability, and can be used in salts cement slurry.
- GR has auxiliary function in terms of fluid loss control ability, which can cut down the dosage of fluid loss control additives.
- Common dosage is 3%-10% (BWOS)
- Cement slurry which used GR latex has good stability, uneasy breaking emulsion, free fluid close to zero.
- The latex slurry's thickening transition time is short, close to right-angle thickening

Technical Specification

• Appearance	Solid	Liquid
	White powder	White emulsion
• Initial consistency, Bc	≤30	
• Thickening linear,	Normal	
• 40Bc-100Bc, time, min	≤40	
• Loss of water, ml/80°C 6.9Mpa. 30min	≤100	
• Compression strength, MPa / 102°C, 24h	≥14	

The ingredients of the cement slurry in the table are: G class cement, ratio $1.90\text{g}/\text{cm}^3$, (Water-cement ratio): 0.36, Water Quality: distilled water, 5.0% GR latex +4.0% G310 fluid loss control additive+0.3% DF-R defoamer.

Packing, Storage

- For the solid GR, pack it with three-layer plastic bags; For the liquid GR, pack it with plastic barrels, 200L per barrel.
- Keep away from fire, damage and leakage during transportation. GR should be stored in cool dry place. Storage life for the solid GR is two years and for the liquid GR is one year.

PRODUCT DATA SHEET

QJ-625 Expanding Additive for Oil Well Cement**Product Description**

QJ-625 can form slight bubbles which distribute uniformly in cement slurry to compensate pressure decrease which results from jellification weightlessness and hydrating volume contraction, and enhance cementing strength of cement. Therefore, it can prevent oil, gas and water from migrating efficiently.

Characteristics

- Appearance: Small particles or power, non-poisonous or non-odor;
- It is compounded by foamer, foam stabilizer and fluid loss control additive.
- Normal dosage: 0.3% ~0.6% (BWOC).
- The suitable temperature is 77°F ~302°F .
- It can produce little and well-distributed foam steadily; moreover, the foaming time is controllable.
- Not harmful in respect of thickening time, rheological properties and free fluid control of cement slurry. Enhances compression strength effectively.
- Suitable for cement slurry with normal and low density.
- Particularly suitable for boreholes which have irregular or enlarged hole diameter. It can also be applied for well control and anti-migration in pressure balanced cementing of deep wells and adjusted wells, as well as cementing wells with high pressure and active oil and gas streams.
- Better expanding results can be achieved by mixing it without water instead of mixing with water.

Technical Specification

• Appearance	Small particles or powder
• Residue(0.420mm screen),%	≤7
• Initial foaming time, min/95°F	≥40
• Expansion ratio, %/167°F	≥25
• Thickening time, min/167°F ,40Mpa,40min	≥Base slurry
• Compression strength, Mpa/199.4°F ,21 Mpa,8h	≥10.3

The ingredients of the cement slurry in the table are: G class cement, W/C 0.44 dosage of QJ-625: 0.5% (BWOC), Water quality: distilled water.

Packing, Storage

- Be packed in three-layer plastics bags with 25kg per bag.
- Be kept away from acid, alkali and moisture. Storage life time is two years.

PRODUCT DATA SHEET

SNC Density Reducing Additive for Oil well Cement**Product Description**

SNC has two functions: one is that it can be used as density reducing additive (bulk additive) in low density cement slurry, another is that, used as spacer fluid before cementing.

Characteristics

- SNC is a basic organic salt.
- Appearance: colorless or grayish viscous liquid, density 1.34g/cm³,
Be used as density reducing additive
- Normal dosage: 1.0%~10% (BWOC). It can be used in compounding cement slurry with density between 1.80~1.30 willfully. Reduce its dosage with the increase of the density of cement slurry, and decrease the ratio of water to cement.
- Its thickening time, rheology and content of free water can meet the demands of construction.
- More ideal expanding result can be achieved by mixing it without water instead of mixing with water. Generally, low density cement slurry with SNC can be used as pilot slurry or lead slurry, while higher density cement slurry(>1.60)with SNC can be used as tail slurry of technical casing.
- Low density cement slurry with SNC is used as insulating liquid usually instead of sealing target zone.
Be used pacer fluid before cementing
- Normal dosage: 10%~15%
- It can be used as insulating liquid for oil based mud if add a small dosage of non-ionic surfactant.

Technical Specification

• Appearance	Colorless or grayish viscous liquid.
• Density, g/cm ³	1.34±0.010
• pH value	11.0±0.5
• Water insoluble, %	≤0.3
• Chloride ion,%	≤0.1
• Cement slurry density, g/cm ³	1.370±0.002
• Thickening time, min/75℃,30MPa,30min	≥200
• Compression strength Mpa/93℃,21MPa,24h	≥1.5
• Free fluid , ml	≤3.5
• Rheology(85℃.0.1MPa.20min) n	≥0.600
• Rheology(85℃.0.1MPa.20min) K,Pa.sn	≤0.100

The ingredient of cement slurry in the table is:JiaHua G class: cement (314.8g) +SNC(25.9g) +distilled water(480.7g) .

Packing, Storage

- Be stored in 25L plastic barrels, 25kg/barrel.
- Be kept away from damage and leakage in store and transportation. Storage life time is one year.
- It may have little sediment after being stored long-term, but it will have no influence on quality.

PRODUCT DATA SHEET

UPV-L Dispersing Agent for Oil Well Cement**Product Description**

UPV-L can adjust the electric charge on the surfaces of cement particles to get proper cement rheology. As a result, it can reduce pump pressure, enhance drilling efficiency, and makes the construction easy.

Characteristics

- UPV-L is modified polymer which made up of methanol and acetone.
- UPV-L is orange yellow liquid or black red liquid.
- The normal dosage is: 0.6%-3% UPV-L (BWOC) and it is not confined to this range in some particular case.
- Dissolve easily
- With increasing additive dosage, it can adjust the rheology of the cement slurry effectively, and reduces the consistency;
- With good high temperature resistance, it can be used within 86°F ~302°F (BHCT).
- Consolidate cement stones, enhance its compression strength and control fluid loss.
- Have a certain retarding property.
- Good compatibility with other additives.

Technical Specification

• Appearance	Orange yellow or black red liquid.
• Rheology(185°F normal pressure, 20min)	≥0.50 (n)
• Rheology(185°F normal pressure, 20min)	≤0.70 (K,Pa.s ⁿ)
• Initial consistency, Bc	≤20
• Thickening time, min/185°F ,70.3Mpa,44min	≥60
• Compression strength Mpa/230°F ,21Mpa, 24h	≥14

The ingredients of the cement slurry in the table are: G class cement, W/C: 0.44, Dosage of UPV-L: 1.2% (BWOC), Water quality: distilled water.

Packing, Storage

- Stored in plastic barrels of 25kgs/barrel.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is one year.

PRODUCT DATA SHEET

USZ Dispersing Agent for Oil Well Cement**Product Description**

USZ can adjust the electric charge on the surfaces of cement particles to get proper cement rheology. As a result, it can reduce pump pressure, enhance drilling efficiency and can therefore be used in construction processes easily.

Characteristics

- USZ is a modified polymer which made up of methanol and acetone.
- USZ is either orange-yellow or reddish-brown powder.
- The normal dosage is: 0.3%-0.8% USZ (BWOC) and it is not confined to this range in some particular case.
- Dissolves easily.
- Increasing additive dosage, it can adjust the rheology of the cement slurry effectively and reduces the consistency.
- With good high temperature resistance, it can be used within 86°F -302°F (BHCT).
- Consolidates cement stones, enhances its compression strength and controls fluid loss.
- With certain retarding properties.
- Mixed with or without water.
- Good compatibility with other additives.

Technical Specification

• Appearance	Orange-yellow or reddish-brown powder
• Rheology(185°F .0.1MPa.20min)	≥0.50 (n)
• Rheology(185°F .0.1MPa.20min)	≤0.70 (K,Pa.s ⁿ)
• Initial consistency, Bc	≤20
• Thickening time min/185°F ,70.3MPa,44min	≥60
• Compression strength Mpa/230°F , 21Mpa, 24h	≥11

The ingredients of the cement slurry in the table are: G class: cement, W/C 0.44, Dosage of USZ: 0.5% (BWOC).
Water quality: distilled water.

Packing, Storage

- USZ packed in three-layer plastic bags, 25kg per bag.
- Be kept away from moisture and possible damage of the packages in transportation, and stored in cool and dry situation. Storage life time is two years.

PRODUCT DATA SHEET

WH-1 Oil-Base Mud Flushing Fluid

Product Description

WH-1 is made of multiple high active surface active agents and others assistant agents.

Characteristics

- WH-1 is primrose yellow or achromatism liquid, non-poisonous, non-odor, non-corrosive
- WH-1 has a strong infiltration and infiltration of the drilling process can quickly formed in the wall of mud cake, mud cake will be spread out erosion, thereby to enhance the water slurry and the contact surface of the cement capacity.
- WH-1 has strong wash oil property, can effectively remove, displace well petroleum phase material, and turn a well's pro-oil interface to the hydrophilic interface, thereby to enhance the capacity of cement slurry.
- WH-1 has good compatibility with oil-base mud.

Technical Specification

- | | |
|------------------------------|---------------------------------------|
| • Appearance | primrose yellow or achromatism liquid |
| • pH | 6.0~9.0 |
| • Ignition residue, % | ≤0.3 |
| • Density, g/cm ³ | 1.00±0.05 |

The evaluation of flushing efficiency is tested with the used oil-based mud and temperature.

Packing, Storage

- Stored in plastic barrels, 25kg/barrel, or packed according to the request of clients.
- Kept away from fire, damage and leakage in store and transportation. Storage life time is one years.

PRODUCT DATA SHEET

WH-2 Weighting and Dusting Agent**Product Description**

WH-2 is a dusting agent that made of some high active surface active agents, suspending agents, weighting agents, thinner and the others addition agents.

Characteristics

- WH-2 is a free flow powder, non-poisonous, non-odor, and non-corrosive.
- Suitable temperature: 77°F ~ 302°F (BHCT).
- WH-2 can combine and effectively mix different density dusting agents among 1.0~1.9g/cm³; It also effects washing the wall of well effectively.
- WH-2 has a strong infiltration of the drilling process can quickly be formed in the wall of mud cake with mud cake singling out effectively erosion; thereby enhancing the water slurry and the contact surface of the cement capacity.
- WH-2 has good compatibility with cement slurry, can dilute cement slurry effectively and improves the performance of cement.

Technical Specification

- | | |
|---|------------------|
| • Appearance | free flow powder |
| • Initial consistency, Bc | ≤30 |
| • Thickening time, min/176°F,40Mpa,40min | ≥60 |
| • Density difference, g/cm ³ | ≤0.05 |
| • Compression strength, Mpa/176°F, normal pressure, 24h | ≥7 |

The ingredients of the cement in the table are: G class cement, pre-made dusting agent(4% aqueous solution): 5%(BWOC), W/C: 0.44, water quality: distilled-water

Packing, Storage

- Sacked with three-layer plastics bag, 25kg per bag;
- Be kept away from moisture and possible damage of the packages in transportation. Storage life time is two years.

PRODUCT DATA SHEET

WH-3 Tamponades Agent**Product Description**

WH-3 tamponades agent was mixed by a variety of cationic polymers, suspending agents, dispersing agents, diluents temperature and surfactants. Because of the special nature of the cationic polymer, It can on the surface of the solid particles, such as debris, form positive electrical charged surround layer, and when the solid particles going down by gravity, due to the repulsion of the same charge, the solid particles in the upper stopper is always a suspended state, cannot accumulation to compaction, thus to making logging tools go through smoothly. At the same time when the poured tapenade agent has contact with the cement on the casing wall and the upper of stopper, due to the cationic polymer's surround feature, it can inhibit the hydration process of the cement slurry, and due to the repulsion between the same charge, it can work out cement dispersion, make it cannot compound cement stone; likewise, due to the effect of the surround performance, it can also avoid the pollution of drilling fluid. Meanwhile, WH-3 tamponades agent has a strong dilution effect. It is able to eliminate, mitigate the blockage of electrical measuring instrument caused by the reasons described above.

Characteristics

- WH-3 tamponade agent is mixed by a variety of cationic polymers, suspending agents, dispersing agents, high-temperature diluents and surfactants.
- WH-3 is a kind of light yellow transparent liquid.
- It is suitable to the temperature around 25°C-120°C。
- WH-3 tamponade agent with water by 1: 3 (V / V) ratio to formulate.
- WH-3 tamponade agent has good compatibility with drilling fluid and cement slurry.

Technical Specification

- | | |
|------------------------------------|-----------|
| • Solid content | ≥37.0% |
| • Density (20°C) g/cm ³ | 1.25±0.05 |
| • PH (1% aqueous solution) | 8.0~10.5 |

Packing, Storage

- Be stored in 25L plastic barrel of polyethylene, 25kg / barrel.
- Be kept away from moisture and possible damage of the packages at transportation; be stored in cool and dry situation.
- Its validity is one year.

For more information on WH-3, please email us at info@wellservpec.com

PRODUCT DATA SHEET

WH-5 Flushing fluid (Liquid)**Product Description**

WH-5 is a dusting agent that made of some high active surface active agents, suspending agents, weighting agents, thinner and the others addition agents.

Characteristics

- WH-5 has a strong infiltration of the drilling process can quickly be formed in the wall of mud cake with mud cake singling out effectively erosion; thereby enhancing the water slurry and the contact surface of the cement capacity.
- WH-5 can combine and effectively mix different density dusting agents, it also effects washing the wall of well effectively.
- WH-5 has good compatibility with cement slurry.

Technical Specification

- Appearance transparency liquid
- PH value 6.0~9.0
- Density difference, g/cm³ 1.00±0.1

Formula of irrigation

Name	Standard	Amount of admixture (g)	Proportion
Water	500C Hot water	600	100
Irrigation	WH-5	60	10

Consequence of irrigation

Efficiency of irrigation (10 min), %	Out of the barrel pick up crude by Fan viscosimeter, Rotate seed 300r/min, Solution temperature> 38℃	>60
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The washing efficiency was measured by oil base mud and the temperature.

Application

- Diluting WH-5 Flushing fluid (Liquid), making into 2%-50% aqueous solution and then reserving. The dosage of flushing fluid for each well is designed as 300 meters of annulus height, and also can be prepared according to the actual design of well cementation.

Packing, Storage

- Plastic barrel, 25kg/barrel, 50kg/barrel, 200kg/barrel.
- Be kept away from moisture and possible damage of the packages in transportation. Storage life time is one year.

For more information on WH-5, please email us at info@wellservpec.com

PRODUCT DATA SHEET

XP-1 Defoamer for Oil Well Cement

Product Description

XP-1 can defoam through reducing surface tension of liquid.

Application

- XP-1 belongs to macromolecule polyether compound.
- Appearance: colorless or yellowish viscous liquid, density 0.94g/cm^3 , non-poisonous, non-odor, non-corrosive, and no environment pollution.
- Normal dosage: 0.1%-0.5% (BWOC).
- It has various functions such as inhibiting foam, de-foaming, preventing migration of gas, de-foaming rapidly
- Resist corrosion of acid and base, as well as high temperature.
- Has good compatibility with other additives.
- Has no harmful influence on other properties of cement slurry.

Technical Specification

- | | |
|----------------------|---------------------------------------|
| • Appearance | colorless or yellowish viscous liquid |
| • PH value | 6.0-9.0 |
| • Ignition residue,% | ≤ 0.3 |
| • Deforming ratio,% | ≥ 90.0 |

Packing, Storage

- Stored in 25L plastic barrels, 25kgs/barrel
- To be kept away from fire, damage and leakage in store and transportation.
- Storage life time is two years.

For more information on XP-1, please email us at info@wellservpec.com